himself can surpass Wolf in the introduction of feeling and humour into pictures of mammal-life.

Although after deserting scientific work Wolf was hardly the less active, and executed a large number of pictures, both in oil and in water-colours, these products of his brain and pencil are not, perhaps, so well known as his earlier work. Wolf was not elected a Royal Academician, as he certainly ought to have been, and very seldom exhibited pictures in the galleries of Burlington House. His splendid efforts are mostly hid away in the palaces and country mansions of certain great patrons, who were always ready to give him full employment. Such mansions as Lilford Hall, Colebrooke, and Guisachan, must be visited by those who wish to examine Wolfs paintings of this class. But, after all, we agree with the biographer that oil is not the material in which Wolf most excels, although it may be as an oil-painter that he prefers to be known. The best of his productions are in water-colour, and in charcoal and chalk. Such, at least, is the opinion of those who regard his work from a scientific point of view.

Before concluding this notice, we cannot avoid alluding to the way in which Wolf's scientific work has been plagiarised in Germany. On turning to the last page of the present volume, the "Royal Natural History" will be found given in the list of the most recent works which Wolf's genius has served to illustrate. Wolf's pictures, however, have arrived here in this instance by a curious route. Originally prepared for the *Proceedings* of the Zoological Society and other works, they were copied by the artist employed on Brehm's "Thierleben." Not only was this done, but in some cases Wolf's initials were removed and those of the copier ("G. M.") inserted in their place. The blocks thus altered for Brehm's "Thierleben" were subsequently purchased by Messrs. Warne and Co. for use in the "Royal Natural History," and have been so employed without the slightest acknowledgment that the designs were originally the products of Wolf's pencil. To prove this, we have only to compare the figure of the "Variegated Spider-monkey," in the "Royal Natural History" (vol. i. p. 64), with the original figure of Wolf in the *Proceedings* of the Zoological Society for 1867 (plate xlvii.). It will be seen that the former figure is initialled "G. M.," but the latter "J. W."

We will now only add an anecdote of Wolf, extracted from Mr. J. G. Millais's recently published "Breath from the Veldt." Mr. Millais, who appears to be as great an admirer of Wolf as his father is known to be, tells us that one day, some years ago, Wolf was busy on one of the superb panels which grace the walls of the late Lord Tweedmouth's Highland residence, Guisachan. Landseer, who was staying at the same house, and who, it should be remarked, was a firm believer in the pre-existence of man in other forms, came up behind Wolf, who was hard at work, and stood gazing at his picture for some time without making any remark. At last Wolf got a bit nervous, and fidgeted about. Then turning round to Landseer, on whom he was afraid the picture had created an unfavourable impression: "Well, Landseer," he said, "you might say something: I'm afraid you don't like it." "Well, not exactly that," was the dry reply; "for I was just thinking that before you were a man, Wolf, you must have been an osprey" (the bird at which the artist was working).

CHARLES CHAMBERS, F.R.S.

We have already briefly announced the death of Mr. Charles Chambers, who for thirty years has directed the Calàba Observatory of Bombay, and who, by his zeal and ability, has materially increased its reputation, and worthily upheld the cause of science in the East. Mr. Chambers received his practical and scientific training under the late Prof. Balfour Stewart, at Kew; and when, in 1866, he was appointed Superintendent of the Bombay Observatory, the fortunes of that institution appear to have been at a low ebb, and its continued maintenance by the Indian Government open to question. Mr. Chambers's appointment was at first of a temporary character, and his office the thankless one of discreetly covering the shortcomings of his predecessors, and of making the results of their observations available for scientific use. The difficulties which he had to overcome are hinted at in some of his numerous papers, which have appeared as appendices to the volumes issued from the Bombay Observatory, or in the publications of the Royal Society. For instance, in his discussion on the meteorology of the Bombay Presidency, it is mentioned that the whole of the original manuscript registers prior to the year 1847 (the observatory was founded in 1841) had disappeared, that it was doubtful, in some of the printed records, whether the time was referred to the Bombay or the Göttingen Meridian; while other evidences of looseness hindered the preparation, or necessitated the rejection of his predecessors' work.

The magnetic results appear to have been in a more satisfactory condition, and very soon after his appointment he was able to report the probability of their turning out trustworthy and valuable. With the mass of accumulated arrears Mr. Chambers grappled manfully, and in the *Philosophical Transactions* for 1869, the Bombay observations from 1859-1865 are employed to discuss the solar variation of magnetic declination at that station. The energy displayed by Mr. Chambers, and the favourable position of the observatory, intermediate in longitude between Kew and Nertchinsk, induced the Scientific Committee, consulted by the Indian authorities, at the head of whom was Sir Bartle Frere, to continue the grant to the observatory, and to supply it with new instruments of the Kew pattern. Some delay appears to have occurred in sending out these instruments from England, a delay which permitted Mr. Chambers to organise his staff and reduce his arrears.

Trained in the school of Sabine and Stewart, Mr. Chambers's earliest investigations had reference to the possibility of referring the disturbances of terrestrial magnetism to the sun, considered as a magnet with its axis perpendicular to the plane of the ecliptic. The conclusion at which he arrived was that no effect of the sun's action as a magnet is sensible at the earth. This decision, at the time, received the approval of the late President of the Royal Society, and subsequent and more elaborate investigations have tended to confirm the conclusion. This tendency to trace the magnetism of the earth to the sun, induced Mr. Chambers later to investigate, from long series of observations, the solar and lunar variations of the three magnetic elements observed at Bombay, and likewise the effect of sun-spot on terrestrial phenomena. It is not easy to do full justice to the long series of varied researches which have come from the Bombay Observatory under his able direction, or to the heavy loss which that institution sustains in his removal.

Not the least of his services to science is to enable his successor to continue the observatory under more efficient conditions than he himself found, and with a reputation considerably enhanced by his devotion.

NOTES.

A meeting for discussion will be held at the Royal Society next Thursday; the subject, "Colour Photography," will be introduced by Prof. Lippmann.

A memorial has been projected in Germany to the late Prof. Hermann Hellriegel, of Bernburg, who died in September last. It is proposed to erect a monument in the churchyard at

Bernburg, where the remains of the distinguished investigator are interred. An appeal for contributions has been issued, and a small Committee, consisting of the President and Secretary of the Bernburg Agricultural Society and Dr. Wilfarth, Hellriegel's colleague in his researches, has been formed to carry out the details. Contributions from this country may be sent to Sir Henry Gilbert, F.R.S., Harpenden, St. Albans.

At a quarterly meeting of the Council of the Royal College of Surgeons of England on Thursday, April 9, the Jacksonian prize for the year 1895 (open only to Fellows or members) was awarded to Dr. A. A. Kanthack, of St. Bartholomew's Hospital, the subject of the essay being "Tetanus." The Walker prize, for the best work in advancing the knowledge of the pathology and therapeutics of cancer, done either partially or wholly within the five years preceding the year in which the prize is granted, has been awarded to Mr. Harold J. Stiles, of Edinburgh University. The prize consists of a gift of £100—except on this, the first occasion, when it is only £60—and a document declaratory of the award. It is open to foreigners as well as to British subjects, and the Committee are not restricted in any way as to the selection of persons qualified to receive the prize, with the exception that members of the Council are not eligible.

The following aids to scientific research are announced in the *British Medical Journal*:—M. Renier has bequeathed to the Belgian Treasury the sum of two million francs (£80,000), to be applied to the foundation of a medical institute to be called the "Institut Rommelaere."—A sum of 5,000 roubles (£500) has been granted to the St. Petersburg Medical Academy for the purposes of experiments with the X-rays. A Committee, consisting of Profs. Jegoroff (Rector of the Academy), Tavnezki, Bechtereff, and Ratimorn, has also been appointed to consider the question of the application of Röntgen's discovery to practical medicine.—A new prize has just been added to the long list of those awarded by the Paris Academy of Medicine. The prize is of the value of 24,000 francs (£960), the proceeds of a capital sum of 800,000 francs (£32,000) bequeathed by Mdme. Audiffred for the purpose. It is to be called the "Francois-Joseph Audiffred Prize," and is to be awarded to any person, of whatever nationality and of whatever profession, who shall within twenty-five years from January 28, 1896, discover a remedy, curative or preventive, recognised by the Academy as efficacious and specific for tuberculosis. In the meantime, the interest accruing from the bequest is to belong to the Academy, and can be applied in any way which that body may think proper.

We regret to notice the deaths of Prof. F. R. Fava, Professor of Civil Engineering at the Columbian University; Mr. John Gundlach, known for his works on the fauna of Cuba; Admiral Carlo Alberto Racchia, Vice-President of the Società Geografica Italiana; and Baron Negri, first President of the same Society.

The *Journal of Botany* for April contains a short biographical sketch of the late Mr. T. H. Buffham, who died on February 9, at the age of fifty-six. He was one of the new English botanists who have devoted themselves to the study of Algæ (especially seaweeds), and had made many interesting observations on their mode of reproduction, which have been published in the botanical journals.

The death is announced in the *Times* of Dr. William Sharp, F.R.S., at the advanced age of ninety-one. He began the study of medicine in 1821, and in 1827 he obtained the diploma of the Royal College of Surgeons. Going over to Paris he attended the University lectures at the Sorbonne, listening to Gay Lussac on physics and Thenard on chemistry. He also attended Orfila's lectures at the School of Medicine. In 1828 Dr. Sharp returned to England, and settled in Bradford; in the ensuing year he was elected surgeon to the infirmary, and in 1837 senior surgeon. In 1843 he resigned his practice in Bradford, and after four years spent in Hull, where he gave winter courses of lectures on chemistry, he went to Rugby in 1847. As early as 1839 Dr. Sharp spoke in favour of local museums. A Philosophical Society was established in Bradford, of which he was elected first President; and his paper on "Local Museums," read before the British Association, led to the establishment of such museums in most provincial towns. He was elected a Fellow of the Royal Society in 1840. It was in consequence of his urgent recommendation that the teaching of physical science was introduced by Dr. Tait into Rugby School, and Dr. Sharp himself became the first "Reader in Natural Philosophy" in 1849 and 1850. From the latter year onwards he gave all his thought and attention to the improvement of the medical treatment of the sick. He made searching investigations into all the systems and schools of medicine, and embodied the results of his studies in a series of "Essays on Medicine," which appeared at irregular intervals, and reached a total of upwards of sixty treatises before his death.

The Council of the Society of Arts offer the Fothergill Prize of £25 and a silver medal for a paper on "The Best Means of Effectually Preventing the Leakage of Current to Earth in Electrical Installations from Generating Heat and Setting Buildings on Fire." The paper should consist of about eight thousand words, and be written with a view to being read and discussed at an ordinary meeting of the Society. Papers submitted for the prize must be sent to the Secretary on or before October 1, 1896. Each paper must be type-written, and bear a motto, the name of the writer being enclosed in a sealed envelope with a similar motto.

Our American correspondent writes, under date April 3:—"Prof. Ogden N. Rood, of Columbia College, has reflected the X-rays from platinum, the amount of reflection being estimated at 1/1260th part of the incident rays.

"The schooner-yacht *Coronet*, which left Brooklyn on December 5, with an equipment for observing the total eclipse of August 9, at Japan, arrived at San Francisco after a successful voyage of 117 days around Cape Horn. Captain James, the owner, and Prof. Todd and his assistants of the Amherst College observation party, will immediately cross the continent by rail, and the yacht will proceed on her voyage in a few days.

"The Local Committee of the fourth Buffalo meeting of the American Association for the Advancement of Science has been organised, and all the Sub-committees appointed. Mayor Jewett is President, and E. P. Dorr is Local Secretary. The Association will meet on August 24. The city of Buffalo will also entertain this year the National Educational Association, the League of Press Clubs, and the American Public Health Association.

"The intense cold weather and numerous severe storms of the past few weeks call for special mention. As late as March 24, a man was frozen to death in central New York. On the 28th the most severe snow-storm of the season, and one of the worst ever known, was reported from Quebec. Even after the month of April began, one of the most severe blizzards on record swept over the north-west, with temperature near zero at some places, accompanied by a remarkable snow-fall, sufficient to blockade roads generally, and to cause snow-drifts from ten to twenty feet deep.

"Ground will be broken this month for the Polhemus Clinic, an adjunct to the Long Island College Hospital. It is the gift of Mrs. Caroline H. Polhemus, as a memorial of her deceased husband, Henry D. Polhemus. The building will be eight stories high, 67 by 92 feet in dimension, with the top coping 116 feet above the street. The land and building cost over 300,000 dollars, and apparatus and equipment will bring the total cost up to about 500,000 dollars; being, with perhaps one exception, the largest individual contribution to one charity ever made in Brooklyn. The admirable Hoagland Bacteriological Laboratory is in immediate proximity."

We learn from *Science* that a Bill has been passed by the Legislature of Maryland, and signed by the Governor, entitled "An Act to establish a State Geological and Economic Survey, and to make provision for the preparation and publication of reports and maps to illustrate the natural resources of the State, together with the necessary investigations preparatory thereto." 10,000 dols. annually is appropriated for carrying out the provisions of the Act, and a Commission has been established, composed of the Governor of the State, the Comptroller, the President of the Johns Hopkins University, and the President of the Maryland Agricultural College. At a meeting of the Commission, on March 25, Prof. William Bullock Clark was apppointed State Geologist. He will at once begin work in the field.

A meeting of the Institution of Mechanical Engineers will be held on Wednesday, April 29, and Friday, May 1. The President, Mr. E. Windsor Richards, will deliver his inaugural address on Wednesday evening. The adjourned discussion will be resumed on the same evening upon the paper, "Notes on Steam Superheating," by Mr. William H. Patchell, read at the last meeting. The following papers will be read and discussed on Friday evening: "Steel Steam-Pipes and Fittings, and Benardos Arc Welding in connection therewith," by Mr. Samuel MacCarthy, of London; "Research Committee on the Value of the Steam-Jacket—Experiment on a Locomotive Engine," by Prof. T. Hudson Beare and Mr. Bryan Donkin. The anniversary dinner will take place on Thursday, April 30.

The spring meeting of the Iron and Steel Institute of Great Britain will be held on Thursday and Friday, May 7 and 8 next, at the Institution of Civil Engineers, Westminster, under the presidency of Sir David Dale. Upon that occasion the Bessemer Gold Medal, which is awarded annually in recognition of meritorious services in advancing the science or practice of the metallurgy of iron and steel, will be presented to Dr. Hermann Wedding, of Berlin. The list of papers down for reading and discussion is a full and comprehensive one, there being no fewer than ten communications on a variety of metallurgical subjects. Prof. Roberts-Austen, C.B., will contribute a paper on the rate of diffusion of carbon in iron, whilst Mr. J. S. de Benneville, of Philadelphia, will read one on some alloys with iron carbides. The application of Mond gas to steel-making will be described by Mr. John H. Darby, and Mr. B. J. Hall will discuss the subject of hot-blast stones. The Baron von Jonstorff, of Neuberg, will read a paper on standard methods of analysis, whilst the hardening of steel will be dealt with by Mr. H. M. Howe, of Boston, and M. F. Osmond, of Paris. Mr. Perry F. Nursey will read a paper on a new process for the production of metallic bars of any section by extrusion at high temperature. The treatment of magnetic iron sand will be brought under notice by Mr. E. Metcalf Smith, of New Zealand, and the iron ores of Oxfordshire will be dealt with by Mr. E. A. Walford.

The sixty-fourth annual meeting of the British Medical Association will be held at Carlisle on Tuesday, Wednesday, Thursday, and Friday, July 28–31. The officers are as follows:—President: Sir J. Russell Reynolds, Bart., F.R.S., President of the Royal College of Physicians. President-Elect: Dr. Henry Barnes. President of the Council: Dr. J. Ward Cousins. Treasurer: Dr. Henry T. Butlin. The scientific business of the meeting will be conducted in nine sections, of which the respective Presidents are as follows, namely:—(A) Medicine, Dr. George F. Duffey; (B) Surgery, Dr. Alexander Ogston; (C) Obstetrics and Gynæcology, Dr. J. Halliday Croom; (D) Public Medicine, Sir Joseph Ewart; (E) Psychology, Dr. J. A. Campbell; (F) Pathology and Bacteriology, Mr. Sheridan Delépine; (G) Ophthalmology, Dr. David Little; (H) Diseases of Children, Dr. James Finlayson; (I) Ethics, Dr. T. F. I'Anson. An address in Medicine will be delivered by Sir Dyce Duckworth, and one in Surgery by Dr. R. Maclaren.

An instructive article on "The General Bearings of Magnetic Observation," contributed to the current number of *Science Progress* by Captain E. W. Creak, should be read by all who are interested in terrestrial magnetism. What the article chiefly aims at showing is the great importance of magnetic observations. As an example of the application of the same, it is remarked: "We have now heavily armed, protected steel cruisers steaming over all parts of the world with less change of deviation of the compass than the wood-built *Erebus* and *Terror* of Ross's Antarctic expedition, and this remarkable result could not have been achieved if the terrestrial magnetic observer had not done his work." Still, much more remains to be done before sufficient is known about the secular change of terrestrial magnetism to enable magnetic charts to be provided to navigators for years in advance, just as the tides can now be tabulated for his use.

The Council of the Physical Society, in a circular issued to the members, call attention to the expense attending the publication of abstracts of physical papers, which has been so successfully undertaken by the Society for a little over a year. The proposals now submitted to the consideration of members with a view to meeting this expense are, firstly, that the annual subscription should be raised to two guineas; secondly, that existing life members should pay an annual subscription of one guinea or an additional composition of fifteen guineas; and, lastly, that an annual guarantee fund should be raised for the next five years to cover the probable deficit. Towards this fund nearly £100 per annum has been already promised. It is universally admitted that these abstracts have proved an incalculable boon to physicists all over the world, and we therefore hope that the last proposal will commend itself to all, whether members or non-members, who appreciate this useful and important work.

A fine series of photographs of flying bullets, both in free air and in different stages of penetrating through a pane of glass, have been taken in Italy by Dr. Q. Majorana Calatabiano and Dr. A. Fontana, of the Italian Artillery. The apparatus described is a modification of that employed by Prof. C. V. Boys, and these photographs might, perhaps, more correctly be described as skiagraphs, since they are shadow-pictures produced on the photographic plate by the light from an electric spark produced by the discharge of a condenser. The chief peculiarity of the present figures is that, in addition to the anterior wave produced by the advance of the aërial disturbance, they exhibit dark striæ just in front of the projectile—a result not previously observed, and which the authors account for by supposing that the sudden compression of the air causes condensation of moisture producing an opaque cloud. In support of this theory, it is stated that the experiments were performed in a moist atmosphere. This blurred appearance is very similar to that which would be produced by the sparks arising from an oscillatory discharge of the condenser, but the careful precautions adopted by the experimenters to prevent any secondary discharge negative this explanation.

In two papers which appear in English, in No. 22 of the *Communications* from the Laboratory of Physics at the University of Leyden, Dr. P. Zeeman gives the results of the measurements he has made on the absorption of electrical vibrations in electrolytes. The method employed consists in starting oscillations in a Lecher wire system by means of a Blondlot oscillator; the wires passing for a part of their length through a trough containing the electrolyte. In order to measure the energy of the vibrations at any point of the wire, the arrangement employed by Rubens, consisting of two very small Leyden jars, the outside coatings of which are connected through a bolometer, is used by the author. In a preliminary series of experiments, in which a solution of sodium chloride having a conductivity $3{\cdot}2 \times 10^{-7}$ times that of mercury was employed, it was found that, for oscillations having a wave-length in air of 6·4 metres, and for which the logarithmic decrement (the γ of Bjerknes) was 0·34, the intensity of the oscillations are reduced to $1/e$ of their initial intensity after passing through 5·7 c.m. of the solution. These results were somewhat vitiated by the fact that the deflections of the bolometer decreased as the jars were moved along the wires in the electolyte, but instead of becoming zero they gradually reach a constant value. The result given above was obtained by diminishing all the readings by this constant amount. In a subsequent series of experiments, in which the spark gap of the primary oscillator was altered, this constant deflection was practically eliminated. In this series experiments were also made, using a solution of copper sulphate having the same specific resistance as the solution of common salt, and it was found that in both cases the intensity of the vibrations was reduced to $1/e$ after passing through 5·1 c.m. of the electrolyte. Hence, the author concludes that, in dilute solutions of different electrolytes having equal conductivities, electrical vibrations of the same period are equally absorbed.

The velocity of an earthquake-wave within a short distance from the epicentre is so difficult to ascertain on account of the large error resulting from a small error in the recorded times, that all estimates with an approach to accuracy are of value. In the Brescian earthquake of November 27, 1894, good time-determinations were obtained at ten stations, all within 445 km. from the epicentre. Assuming the velocity to be uniform in all directions, Dr. M. Baratta calculates it to be 1·411 km. per second. Taking account of the nature and extent of the rock traversed by the earth-wave, he also finds the average velocity to be ·782 km. per second in alluvium, and 1·569 km. per second in the older and more coherent rocks.

A couple of teeth found at Taubach, near Weimar, are claimed by Dr. A. Nehring to be the oldest human teeth yet found in Europe (*Verhandl. Berlin Anthrop. Ges.*, 1896, p. 573). One of these is a milk molar, and the other a permanent first molar of the left lower jaw. The crown of the latter measures 11·7 by 9·9 mm., and has three outer and two inner cusps, besides minor cusps and folds; in this, and in the occurrence of grooves and holes in the outer side of crown, the tooth is remarkably like that of the chimpanzee, but not much like that of the gorilla or orang. Dr. Nehring calls attention to the fact that the first pre-molar and last molar are reduced in size in modern man as compared with early man, and he finds exactly the same in domesticated, as compared with wild, dogs. In domesticated dogs, as in civilised man, the jaw is relatively feebly developed, and there is a tendency to reduction of the last molar.

In the collection of mammals, made in connection with the recent re-survey of the boundary line between Mexico and the United States, are several which appear to be new to science. In view of the probable delay in issuing the complete report on these collections, advance sheets are being issued containing preliminary diagnoses of the new forms. In one of these sheets, just received, Dr. E. A. Mearns describes as new sub-species *Spermophilus mexicanus parvidens* (Rio Grande Spermophile) and *S. harrisi saxicolus* (Rock Spermophile). The common "Jackrabbit" of the Rio Grande, described by Audubon and Bachman, Baird, Allen, and other writers as *Lepus callotis* and *L. texianus*, is taken to represent a new species, which has been named *L. merriami*. Two new species of mouse, *Peromyscus canus* (Texas grey mouse) and *P. tornillo* (Tornillo mouse), are described, and two new sub-species, *P. texanus medius* (San Dilgo-plains mouse) and *P. t. clementis* (San Clemente mouse).

Technical bacteriology has received an interesting addition to its list of useful fermenting moulds, in the shape of a recent contribution from Dr. C. Wehmer. At the instigation of and with the assistance of Dr. Went, of Java, Dr. Wehmer has isolated and carefully studied the organism responsible for the production of the well-known Soja (Tao-Yu). So far, it appears to have every right to be regarded as a novelty, although in some respects closely allied to the *Aspergillus oryzæ* of Japanese fame. In designating this organism as *Aspergillus Wentii*, Dr. Wehmer gracefully acknowledges Dr. Went's important share in its discovery and identification. In artificial cultures it is readily distinguished from its Japanese *confrère*, as it produces a pigment approaching a light chocolate in colour, whilst the former elaborates a greenish-yellow growth. The method adopted for its collection is very simple, merely consisting in covering up boiled beans, subsequently superficially sun-dried, with the leaves of *Hibiscus tileacus*; the much-valued *Aspergillus* then invariably makes its appearance on the beans, and the usual process of manufacture is then proceeded with. Curiously no other article of food offers any attraction to the Aspergillus, beans alone serving for its capture. This method of collecting the mould exactly resembles that employed by the Chinese in their process of arrak manufacture. The original memoir is accompanied by some beautiful plates, and one of these shows very clearly the different appearance on rice-cultures of the *Aspergillus oryzæ* and the *Aspergillus Wentii* respectively.

We have received the first part of a *Handbuch der praktischen Zimmergärtnerei*, by Max Hesdörffer (Berlin: Oppenheim). It appears to be a very complete practical guide to the indoor cultivation of plants, published at a very low price (75 pf. when complete). The present part contains a chromolithograph, and a number of wood-block illustrations of utensils and of gardening processes.

The Rebman Publishing Company, Limited, have in the press for publication a serial work exemplifying the uses of the new photography in medical and surgical diagnosis, entitled "Archives of Clinical Skiagraphy," by Mr. Sydney Rowland. The first part will consist of six collotypes (10 by 12½ inches), illustrating cases in which the method has been successfully applied to elucidating obscure injuries to the knee, elbow, and other parts of the body. The first plate is a skiagram of the complete osseous system of a full-grown child—the largest subject as yet done.

A new local bi-monthly magazine—the *Halifax Naturalist*—has made its appearance, its object being to publish information concerning the natural history and archæology of the ancient parish of Halifax, and to record the doings of the Halifax Scientific Society. The first number contains a coloured geological map of Halifax, by Mr. C. E. Fox, and articles on some physiographical features of the district, by Mr. W. Simpson; the birds of the Luddenden Valley, by Mr. H. Waterford; and the flora of Halifax, by the editor, Mr. W. B. Crump. Such a magazine should awaken interest in the wild life of the parish to which it belongs, and lead to a keener and wider appreciation of the works of nature.

WE have received the meteorological *Jahrbuch* of the observatory of the Magdeburg *Journal* for the year 1894. The results are given in the same form as in the previous twelve volumes, and the work is a good sample of the way in which complete observations and means may be condensed into a compact and convenient form. The first part contains eye observations made thrice daily, and the second part contains hourly observations from self-recording instruments with facsimile traces of the sunshine recorder, and also curves of the barograph and thermograph for periods of disturbance, mostly during thunderstorms. The highest shade temperature recorded during the year was 94°·3 in July, and the lowest 0°·9, in January. The total annual rainfall amounted only to 19·4 inches, and the greatest fall in twenty-four hours was 1·6 inches.

AMONG the papers published in the March number of the *Journal* of the Royal Horticultural Society (vol. xix. part 3, 1896), are three to which attention may profitably be directed here. Mr. Francis Darwin has a paper on "Etiolation as a Phenomenon of Adaptation." Mr. A. W. Sutton contributes an account of the introduction and cultivation of the potato, illustrated by numerous figures. He has made some grafting experiments with the potato and tomato, and describes his results in his paper. As a result of introducing a tomato graft upon a potato stem, the potato roots, maintained in growth by tomato foliage, produced a crop of potatoes in the pot, while the tomato foliage above ground produced a crop of tomatoes, nourished by the potato roots in the pot. In a short paper, Dr. Maxwell Masters describes a number of substitutes for larch. He shows that there are many conifers which more or less fully realise the characteristics of an ideal substitute for larch trees.

WHEN Henri St. Claire Deville, in company with Debray, Morin, and Rousseau Bros., erected the first plant specially designed for the manufacture of aluminium, forty years ago, they did not foresee the greatness of the future of the industry they founded. A sign of the growth of the industry in the United Kingdom is the appearance of a monthly periodical, *Aluminium and Electrolysis*, which will be concerned with all matters pertaining to the manufacture and use of the metal. France and the United States have for some time led the way in aluminium manufacture, and have had their special journals, but no paper primarily devoted to the interests of aluminium has hitherto been published in the United Kingdom. The addition to the ranks of industrial journals is made at an opportune time, for, after a period of quiet, once more increased attention is being given to aluminium in Great Britain.

IT is not given to many scientific discoveries to command so much popular attention as Röntgen's discovery of the X-rays; and the demand for information on the subject has resulted in a copious supply of lectures and literature, while the desire to revel in the marvellous has been gratified by a plenitude of photographs of invisible objects, published in various forms. Messrs. Valentine and Sons have added to their series of collotype view-books a brochure containing reproductions of eight Röntgen photographs taken by Profs. E. Waymouth Reid and J. P. Kuenen at University College, Dundee. A brief description is given of the method of work, and of each photograph. Another publication on the same subject, by August Dittmar, has been published by Mr. F. Bauermeister, Glasgow. This pamphlet contains a general statement of the elementary principles which result in the production of kathode rays and Röntgen photography, illustrated with eleven text-figures and one photograph obtained by means of X-rays.

AMONGST the products of the reaction at 400°-500° of hydrobromic acid upon phosphoryl trichloride, M. Besson (*Comptes rendus*, April 11) has succeeded in isolating the missing phosphoryl chlorobromide $POClBr_2$. This is a solid substance at the ordinary temperature, melting at 30°, and distilling under normal atmospheric pressure at 165°. Its boiling-point is not fixed, however, as it slowly decomposes into the chlorobromide $POCl_2Br$ of Menschutkin and phosphoryl tribromide, a property which renders its isolation by fractional distillation difficult. Besides these two chlorobromides and the tribromide, M. Besson obtained considerable quantities of solid phosphorus pentabromide from the product of the original reaction. The formation of this substance is remarkable, as it involves the replacement of the oxygen of the phosphoryl group by bromine with elimination of water, whereas at ordinary temperatures the inverse change is known to take place with great vigour.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus rhesus*, ♂) from India, presented by Mr. Owen L. Hancock; a Red and Blue Macaw (*Ara macao*) from Central America, presented by Mr. Eugene E. G. Jones; a Dusky Duck (*Anas obscura*, ♀) from North America, presented by Mr. W. H. St. Quintin; an Indian Elephant (*Elephas indicus*, ♂) from India, two Red-beaked Weaver Birds (*Quelea sanguinirostris*) from West Africa, a Java Sparrow (*Padda oryzivora*) from Java, a Rose-breasted Grosbeak (*Hedymeles ludovicianus*) from North America, a Lesser Black-backed Gull (*Larus fuscus*), British, deposited; a Caffer Cat (*Felis caffra*) from South Africa, purchased.

OUR ASTRONOMICAL COLUMN.

MIRA CETI.—For some years past it has been found that the predicted maxima of this famous variable star, based upon a period of 331 days, have been several weeks in advance of the actual maxima, and it would seem that the time has arrived when a new discussion of its light-curve should be undertaken. According to the ephemeris, the last maximum was due on December 9, but the greatest brightness did not occur until towards the end of January, as shown by the following summary of the observations (*Bull. Soc. Ast. de France*, April):—

Date.		Mag.	Date.		Mag.
Nov.	1-11	9·0	Jan.	15	3·7
	15-30	8·2		18	3·5
Dec.	1-10	7·8-7·5		20	3·2
	15-31	7·5-6·5	Feb.	1	3·2
Jan.	1	6·0		15	3·4
	7	4·8		20	3·6
	9	4·2	March	1	3·8
	10	3·8		10	4·2

According to M. Dumenil (*Comptes rendus*, March 30), the magnitude at maximum during the last twelve periods has varied between 2·5 and 4·7. This fact, in conjunction with the apparent irregularity of the light-curve, indicates that there is more than one source of variability. On the meteoritic hypothesis the variations are produced by two or more swarms of meteorites revolving round a larger central swarm, and passing through its outlying parts near periastron. On this supposition it may be possible to analyse the light-curve of Mira so as to determine the part played by the individual sources of variation, each of which may be perfectly regular.

AN EXHIBITION OF ASTRONOMICAL PHOTOGRAPHS.—An international exhibition of astronomical photography will form part of the Berlin Industrial Exhibition to be held this year, from May 1 to October 15. Herr F. S. Archenhold, who is arranging the collection, has just sent out a circular asking for contributions of photographs of astronomical instruments of historic interest, of plans and buildings of observatories, as also the reproductions of astronomical drawings and kindred subjects (such as spectra, luminous night-clouds, &c.), lantern-slides 8½/10 cm. in size, or larger, also separate heliogravures already published in the annals of observatories, may be sent in to complete the photographic collection. In all cases, where it is not especially requested that they shall be returned, photographs will be retained and preserved as a complete collection, which, together